

Hernia Surgery

Open Surgery for Hernia Repair



Understanding Hernias

A hernia (or “rupture”) is a weakness or defect in the wall of the abdomen. This weakness may be present at birth. Or, it can be caused by the wear and tear of daily living. Although men are more likely to have hernias, they also occur in women and children. In fact, hernias are so common that people of any age can get them. Most hernias aren’t life-threatening. But treatment can help eliminate discomfort and prevent complications.

When a Bulge Forms

A weakness or break in the abdominal wall allows the contents of the abdomen to push outward. This often causes a bulge under the skin. It can also cause discomfort or pain. Your symptoms depend on the size and location of your hernia. Common symptoms include:

- A bulge in the groin, abdomen, thigh, or genitals. The bulge may get bigger when you stand and go away when you lie down.
- Discomfort or pain that is worse at the end of the day or after standing for long periods.
- Pain during lifting, coughing, sneezing, or physical activities.
- A feeling of weakness or pressure in the groin.
- Discomfort or pain during urination or bowel movements.



This booklet is not intended as a substitute for professional medical care. Only your surgeon can diagnose and treat a medical problem.

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How Hernias Are Treated

A hernia will not heal on its own. Surgery is needed to repair the defect in the abdominal wall. If not treated, a hernia can get larger. It can also lead to serious medical complications. Fortunately, hernia surgery can be done quickly and safely. Below is an overview of surgical treatment.



Your Evaluation

Your surgeon will ask questions about your symptoms and overall health. You'll also be examined. In some cases, tests are needed to make sure you're healthy enough for surgery.



Surgical Treatment

Surgery is used to repair the weakness in the abdominal wall. Different methods are used depending on the location and type of hernia. You can usually go home the same day as surgery.



Your Recovery

After surgery, you can likely return to your normal routine within a short time. Repairing the hernia will also make it easier to enjoy daily activities without pain or worry.

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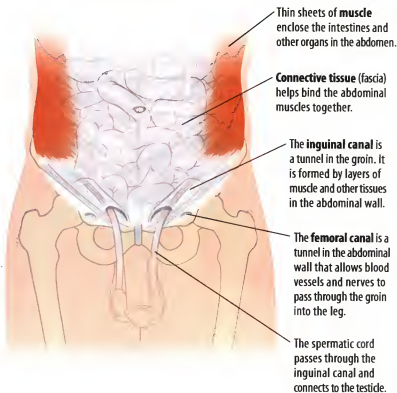
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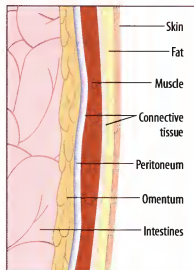
The Abdomen and Groin

Hernias occur when part of the body bulges into an area where it shouldn't. Most often, this happens when tissues in the abdomen bulge through an opening into the groin. Normally, the abdomen and groin are kept separate by a wall of muscle and tissue. The only natural openings in the wall are small tunnels called **canals**. These allow nerves, blood vessels, and other structures to pass between these two areas.

Front View

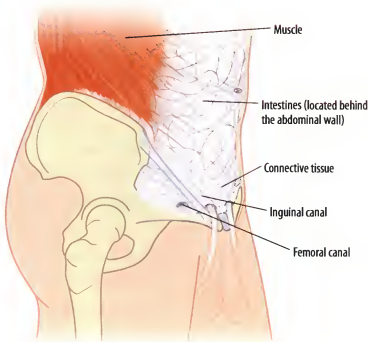


The Abdominal Wall



The **abdominal wall** is formed by layers of tissue, such as muscle and connective tissue. It helps protect and enclose the intestines and other organs.

Side View



Areas of Weakness

Certain areas of the abdominal wall are naturally prone to weakness. With time and physical stresses, these areas may weaken further and tear. This can allow the intestines or other tissues to bulge out through the opening. It may help to think of the abdominal wall as the rubber on a bicycle tire. If a spot on the outside of the tire weakens and frays, the inner tube will bulge out.



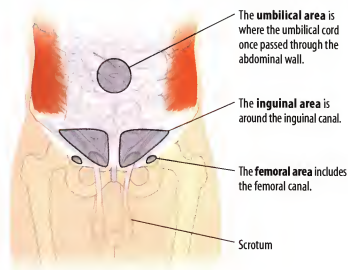
The contents of the abdomen may bulge out through the abdominal wall like the inner tube of a worn bicycle tire.

What Makes an Area Weak?

Any opening in the abdominal wall is prone to weakness. This includes canals in the groin area. It also includes previous openings that have closed, such as the navel (bellybutton) or the site of a healed surgical incision. In other areas, the abdominal wall can be weakened by injury or aging.

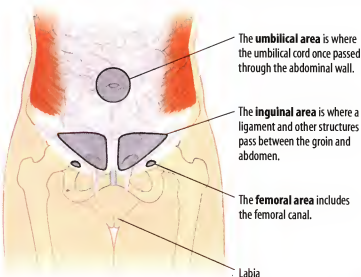
Weak Areas in Men

Most hernias in men occur at or near the inguinal canal. This is where nerves and vessels pass between the groin and abdomen.



Weak Areas in Women

Like men, women are most likely to get hernias in the inguinal area. But women are more likely to have femoral hernias than men.



Locations of Hernias

The type of hernia you have depends on its location. The most common types of hernias form in the groin. Other types form in the abdomen. Hernias can also form on both sides of the body (bilateral hernias), or recur in the same spot (recurrent hernias). In some cases, you can have more than one type at a time.

Groin Hernias

Groin hernias are the most common types of hernias.

Indirect inguinal hernias occur in the groin at the opening of the inguinal canal. (See page 10.)

Direct inguinal hernias occur in the groin near the opening for the inguinal canal. (See page 11.)

Femoral hernias occur in the femoral canal. (See page 16.)

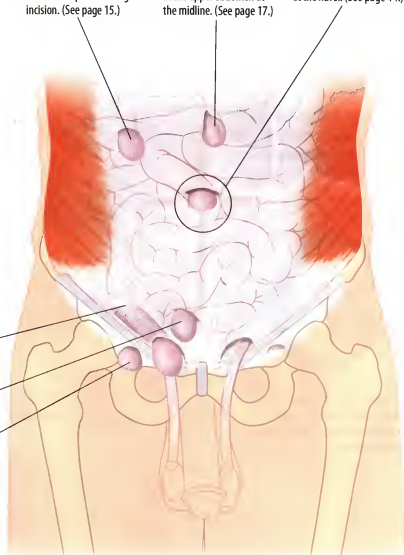
Abdominal Hernias

Abdominal hernias most often form around the navel or the site of a previous surgery.

Incisional hernias occur at the site of a previous surgical incision. (See page 15.)

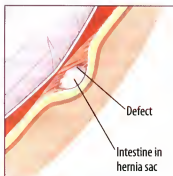
Epigastric hernias occur in the upper abdomen at the midline. (See page 17.)

Umbilical hernias occur at the navel. (See page 14.)



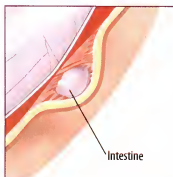
How a Hernia Develops

Although a hernia bulge may appear suddenly, hernias often take years to develop. They grow larger as pressure inside the body presses the intestines or other tissues out through a weak area. With time, these tissues can bulge out beneath the skin of the abdomen. Or, they can bulge into the groin, thigh, scrotum, or labia. In some cases, a loop of intestine may become tightly trapped by muscle tissue. This can cause severe pain and requires immediate treatment.



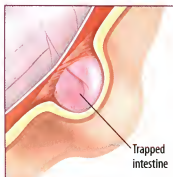
The Wall Weakens or Tears

The abdominal lining bulges out through a weak area and begins to form a **hernia sac**. The sac may contain fat, intestine, or other tissues. At this point, the hernia may or may not cause a visible bulge.



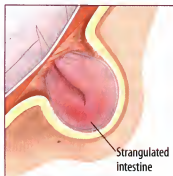
The Intestine Pushes into the Sac

As the intestine pushes further into the sac, it forms a visible bulge. The bulge may flatten when you lie down or push against it. This is called a **reducible hernia** and does not cause any immediate danger.



The Intestine May Become Trapped

The sac containing the intestine may become trapped by muscle (incarcerated). If this happens, you won't be able to flatten the bulge. You may also have pain. Prompt treatment may be needed.



The Intestine May Become Strangulated

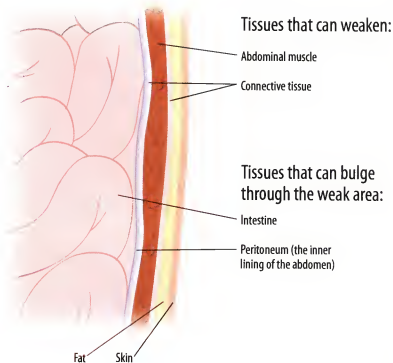
If the intestine is tightly trapped, it becomes **strangulated**. The strangulated area loses blood supply and may die. This can cause severe pain and block the intestine. Emergency surgery is needed to relieve the blockage.

Why Surgery Works

Surgery treats a hernia by repairing the weakness in the abdominal wall. An incision is made so the surgeon has a direct view of the hernia. The repair is then done through this incision (open surgery). To repair the defect, muscle and connective tissue may be sewn (sutured) together to make a "traditional repair." More often, though, special mesh materials are used to patch the weak area and make a "tension-free repair."

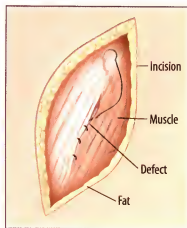
Layers of the Abdominal Wall

The abdominal wall is made up of layers of muscle, fat, and other tissues. These layers work together to give strength to the abdominal wall. During hernia surgery, the goal is to repair the weakness in the muscle and connective tissue. This prevents the intestines or other tissues from bulging out again.



Traditional Repairs

To make a traditional repair, an incision is made over the hernia. The muscle tissue surrounding the weak area is then sewn together to repair the defect. The incision is closed with stitches, staples, surgical tape, or special glue. This method can be used to repair any type of hernia.

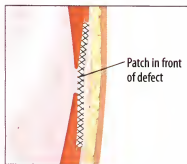


Tension-Free Repairs Using Mesh

Most hernias are treated using “tension-free” repairs. This is surgery that uses special mesh materials to repair the weak area. Unlike traditional repairs, the abdominal muscle isn’t sutured together. Instead, the mesh covers the weak area like a patch. This repairs the defect without “tension” on the muscles. It also makes recovery faster and less painful. The mesh is made of strong, flexible plastic that stays in the body. Over time, nearby tissues grow into the mesh to strengthen the repair.

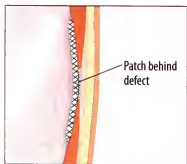
Where the Mesh Is Placed

Tension-free repairs are made in different ways. In some cases, the mesh materials are placed in front of the weak area (anterior repair). In others, the mesh is placed behind the weak area (posterior repair). Occasionally, a combination repair is used.



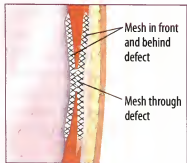
Repair in Front

An incision is made over the hernia. A mesh “patch” is then placed in front of the weak area. The patch is sutured to nearby tissues to hold it in place.



Repair in Back

An incision is made over the hernia. A mesh “patch” is placed behind the weak area. It is then sutured to nearby tissues. Pressure inside the abdomen helps hold the patch in place.



Combination Repair

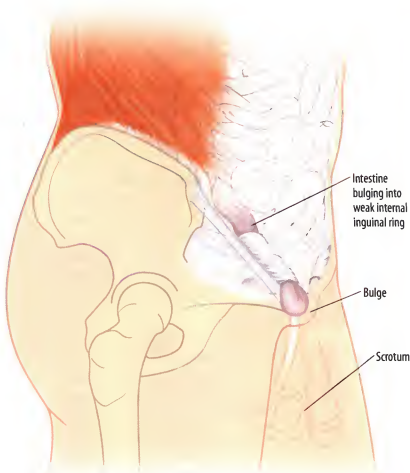
An incision is made over the hernia. Mesh devices are then placed in front of and behind the weak area. In some cases, this type of repair includes mesh that goes through the defect in the abdominal wall.

Understanding Inguinal Hernias

Inguinal (groin) hernias are common in both men and women. There are two types: **indirect inguinal** hernias and **direct inguinal** hernias. They form at or near a tunnel between the abdomen and groin called the inguinal canal. Since these hernias form in the same area, your surgeon may not be able to determine which type you have prior to surgery. Regardless, your surgeon will be able to identify and repair either type during surgery.

Indirect Inguinal Hernias

An indirect inguinal hernia forms at the inside opening of the inguinal canal (the internal inguinal ring). This is an area that is naturally prone to weakness. With time and the effects of gravity, the intestine can press into the canal and form a bulge in the groin.



Indirect Inguinal Hernias in Men

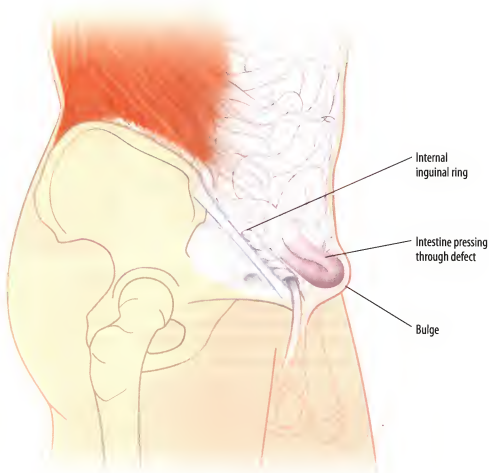
Indirect inguinal hernias are the most common hernias in men. As a male fetus develops in the womb, the testicles move from the abdomen down through the inguinal canal into the scrotum. If the tissues around the canal don't close properly, a hernia can follow the same path later in life. This means the intestine can sometimes bulge all the way through the canal into the scrotum.

Indirect Inguinal Hernias in Women

Indirect inguinal hernias can also happen in women. As a female fetus develops in the womb, a ligament and other structures move from the abdomen down through the inguinal canal. If the tissues around the canal don't close properly, a hernia can follow the same path later in life. This means the intestine can sometimes bulge all the way through the canal into the labia.

Direct Inguinal Hernias

Direct hernias are similar to indirect hernias, but less common. They form at a weakness in the abdominal wall next to the opening of the inguinal canal (the internal inguinal ring). Over time, the intestine can press through the weak area and bulge into the groin.



Direct Inguinal Hernias in Men and Women

Men are more likely to get direct hernias. But they may occur in either gender—especially after the age of 40. Direct hernias often get worse with age or physical stress. They can also occur at the same time as an indirect hernia. For this reason, the direct area may also be reinforced during surgery for an indirect hernia.

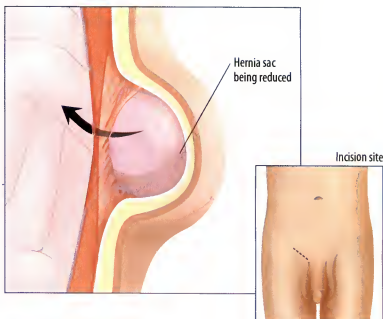


Repairing Inguinal Hernias

Your surgeon will talk with you about the best method to repair your inguinal hernia. In some cases, a traditional repair is used. More often, a mesh device is used to make a tension-free repair. Over time, new tissue grows into the mesh. This will strengthen the repair and help prevent the hernia from recurring.

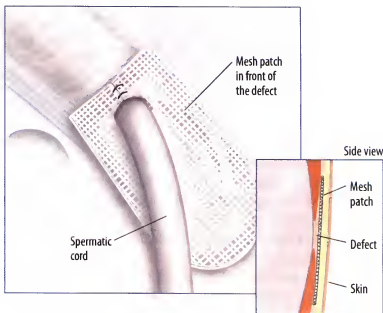
Reducing the Hernia

An incision is made above the weakened area. The hernia is then reduced by pushing the hernia sac and any protruding tissue back into the abdomen. If needed, the sac may be tied off and removed. The defect can then be repaired.



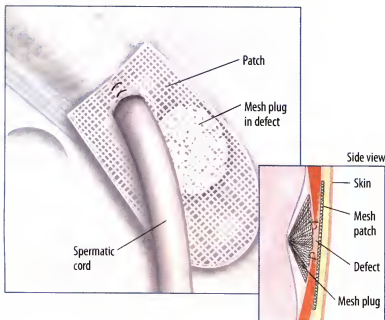
Repair with a Patch

A thin mesh patch is placed in front of or behind the defect. It is then secured to nearby tissues. Once the patch is in place, the skin is closed with stitches, staples, surgical tape, or special glue.



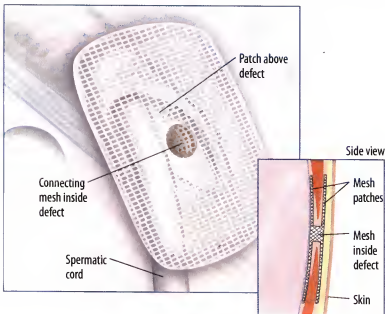
Repair with a Plug and Patch

A mesh plug is used to fill the hole in the abdominal wall. A mesh patch is then secured above the defect to provide strength. Once the mesh is in place, the skin is closed with stitches, staples, surgical tape, or special glue.



Repair with a Combination Device

A combination device uses mesh patches placed in front of and behind the defect. They are connected by a mesh bridge that goes through the opening in the abdominal wall. Once the mesh is secured in place, the skin is closed with stitches, staples, surgical tape, or special glue.



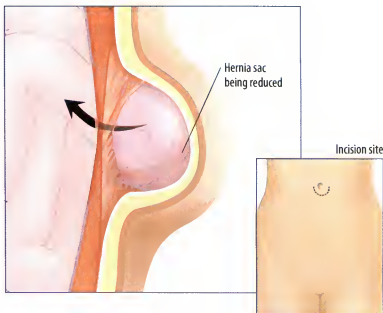


Repairing Umbilical Hernias

Umbilical hernias form at the navel. They are common in adults and children of both genders. The hernia is often present at birth. Or, it can be caused by abdominal pressure from pregnancy, frequent coughing, being overweight, or other factors. Umbilical hernias may be treated using a traditional repair. Often, though, a mesh device is used to make a tension-free repair.

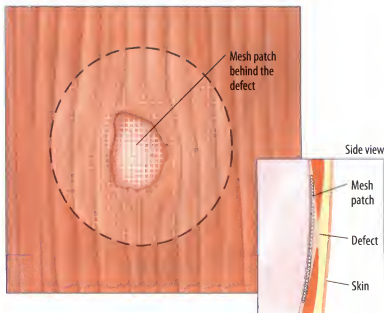
Reducing the Hernia

An incision is made near the navel. The hernia is then reduced by pushing any protruding tissue back into the abdomen. The weak area can now be repaired.



Repairing the Weakness

A thin mesh patch is placed behind or in front of the defect. It is then secured to nearby tissues. Once the mesh is in place, the skin is closed with stitches, staples, surgical tape, or special glue. Over time, new tissue grows into the mesh. This strengthens the repair and helps prevent the hernia from recurring.



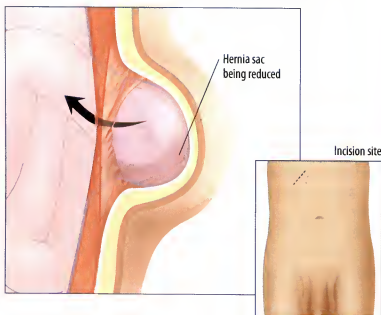


Repairing Incisional Hernias

Incisional hernias bulge through the scar left by a previous surgical incision. They can occur months or years after the surgery. Over time, incisional hernias can widen and become more difficult to repair. They can also become strangulated and cause serious complications. Incisional hernias may be treated using a traditional repair. More often, though, a mesh device is used to make a tension-free repair.

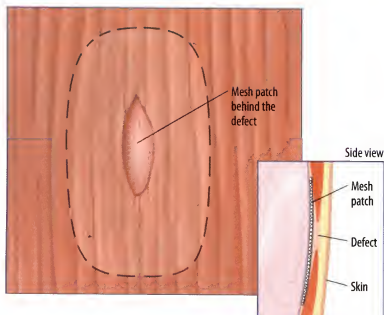
Reducing the Hernia

An incision is made through the previous surgery scar. The hernia is then reduced by pushing any protruding tissue back into the abdomen. The weak area can now be repaired.



Repairing the Weakness

A thin mesh patch is placed behind or in front of the defect. It is then secured to nearby tissues. Once the mesh is in place, the skin is closed with stitches, staples, surgical tape, or glue. Over time, new tissue grows into the mesh. This strengthens the repair and helps prevent the hernia from recurring.



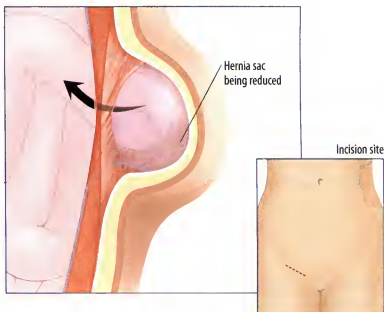


Repairing Femoral Hernias

Femoral hernias are more common in women. They result from a weakness in the femoral canal. This is the opening where large blood vessels and nerves pass between the leg and the abdomen. Although these hernias are small, they can trap the intestine and cause serious complications. Femoral hernias may be treated using a traditional repair. Often, though, a mesh device is used to make a tension-free repair.

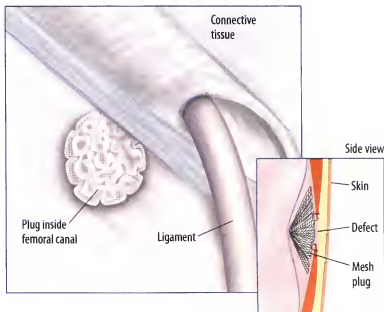
Reducing the Hernia

An incision is made to reach the weakened area. The hernia is then reduced by pushing the hernia sac and any protruding tissue back into the abdomen. If needed, the sac may be tied off and removed. The defect can now be repaired.



Repairing the Weakness

A mesh plug is often used to fill the hole in the abdominal wall. It is then secured to nearby tissues. In some cases, a mesh patch is used instead of a plug. Once the mesh is in place, the skin is closed with stitches, staples, surgical tape, or special glue. Over time, new tissue grows into the mesh. This strengthens the repair and helps prevent the hernia from recurring.



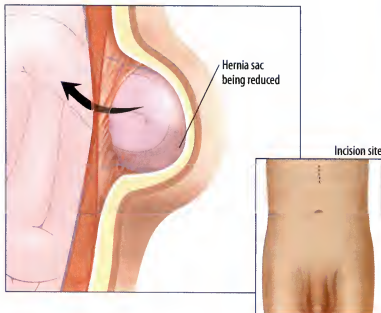


Repairing Epigastric Hernias

Epigastric hernias form in the upper abdomen at the midline. This is an area where muscle and connective tissue fibers are prone to weakness. Epigastric hernias may be treated using a traditional repair. Often, though, a mesh device is used to make a tension-free repair.

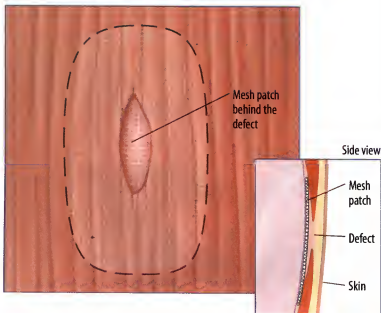
Reducing the Hernia

An incision is made to reach the weakened area. Any protruding tissue is then pushed back into the abdomen. The defect can now be repaired.



Repairing the Weakness

A thin mesh patch is placed behind or in front of the weak area. It is then secured to nearby tissues. Once the mesh is in place, the skin is closed with stitches, staples, surgical tape, or special glue. Over time, new tissue grows into the mesh. This strengthens the repair and helps prevent the hernia from recurring.



Your Surgical Experience

The first step in preparing for surgery is having a physical exam. Your surgeon will also ask about your medical history. Then you and your surgeon will schedule a date for surgery. Follow your surgeon's advice on how to get ready for the procedure. You can usually go home the same day as your surgery. In some cases, though, you may need to stay in the hospital overnight.

Medical History and Physical Exam

Your surgeon will ask questions about your symptoms, health, and any history of hernia problems. You'll then have a physical exam. You may be asked to cough or tighten your stomach muscles while your surgeon checks for signs of a hernia. Certain tests may also be needed to ensure you're healthy enough for surgery.

Getting Ready for Surgery

Your surgeon will talk with you about preparing for surgery. Follow all the instructions you're given and be sure to:

- Tell your surgeon about any medications, supplements, or herbs you take. This includes both prescription and over-the-counter items.
- Stop taking aspirin, ibuprofen, and naproxen as directed.
- Arrange for an adult family member or friend to give you a ride home after surgery.
- Stop smoking. Smoking affects blood flow and can slow healing.
- Gently wash the surgical area the night before surgery.
- Don't eat or drink after midnight, the night before your surgery.





The Day of Surgery

Arrive at the hospital or surgical center at your scheduled time. You'll be asked to change into a patient gown. You'll then be given an IV to provide fluids and medication. Shortly before surgery, an anesthesiologist will talk with you. He or she will explain the types of anesthesia used to prevent pain during surgery. You will have one or more of the following:

- Monitored sedation to make you relaxed and sleepy.
- Local anesthesia to numb the surgical site.
- Regional anesthesia to numb specific areas of your body.
- General anesthesia to let you sleep during surgery.

After Surgery

When the procedure is over, you'll be taken to the recovery area to rest. Your blood pressure and heart rate will be monitored. You'll also have a bandage over the surgical site. To help reduce discomfort, you'll be given pain medications. You may also be given breathing exercises to keep your lungs clear. Later, you'll be asked to get up and walk. This helps prevent blood clots in the legs. You can go home when your surgeon says you're ready.

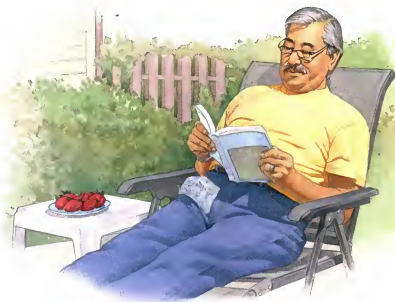
Risks and Complications

Hernia surgery is safe, but does have risks, including:

- Bleeding
- Infection
- Numbness or pain in the groin or leg
- Risk the hernia will recur
- Damage to the testicles or testicular function
- Anesthesia risks
- Mesh complications
- Inability to urinate
- Bowel or bladder injury

Your Recovery

Help make your surgery a success by taking an active role in your recovery. Start by reducing pain and swelling. Then begin easing back into your routine. For best results, take short walks as soon as you can. This helps prevent blood clots in the legs. It will also help speed healing. Follow your surgeon's advice about caring for your incision. And be sure to keep appointments for follow-up visits.



Reduce Swelling

For the first few days, it's common for the area around the incision to be swollen, discolored, and sore. To help reduce swelling, you can put an ice pack or bag of frozen peas in a thin towel. Then place the towel on the swollen area 3 to 5 times a day for 15 to 20 minutes at a time. Take care of the incision as advised by your surgeon. You should also ask your surgeon when it's okay to start bathing again. In most cases, this is a day or two after surgery.

If a Groin Hernia Was Repaired

You may have swelling that gets worse after a few days. This is because blood and fluids can collect in the groin and genitals. To help reduce swelling, use ice packs (see above instructions). Wearing supportive underwear, such as briefs, can also help reduce discomfort.

Manage Pain

You will likely have some pain for the first few days. You may also feel bloated and tired. To help you feel better, your surgeon will prescribe pain medications. Don't wait for pain to get bad. Take your medications on time as directed. Be aware that some pain medications can cause constipation. So, your surgeon may also suggest a laxative or stool softener.

Return to Activity

You can start getting back to your routine as soon as you feel able. Just take it easy at first. Follow all your surgeon's advice for recovery. The following tips may help:

- Take short walks to improve circulation.
- Avoid heavy lifting for at least a week.
- Ask your surgeon about returning to work.
- Eat healthy, high-fiber foods and drink lots of fluids.
- You can begin having sex again when you feel ready.



Keep Follow-up Appointments

Keep follow-up appointments during your recovery. These allow your surgeon to check your progress and make sure you're healing well. You may also need to have your stitches, staples, or bandage removed. During office visits, tell your surgeon if you have any new symptoms. Your surgeon can also help answer any questions or concerns you may have.



When to Call Your Surgeon

Call your surgeon if you have any of the following:

- A large amount of swelling or bruising (some testicular swelling and bruising is common)
- Bleeding
- Increasing pain
- Fever over 101°F (38.3°C)
- Increasing redness or drainage of the incision
- Trouble urinating
- Nausea or vomiting

Hernias in Children

Hernias in children are not uncommon. They're caused by an abdominal wall defect that is present at birth. Most often, the hernia forms in the groin or umbilical area. It can usually be felt as a bulge under the skin. Childhood hernias can be safely repaired using outpatient (same day) surgery. Best of all, most children recover quickly with only minor discomfort.



Questions You May Have

It's normal to have concerns about your child's surgery. Here are answers to some common questions:

- **Is surgery safe?**

Yes. Complications from hernia surgery are rare. In fact, most children get back to normal in a very short time.

- **Will my child be in pain during surgery?**

No. Your child will be given medications that make him or her sleep during surgery. Some mild discomfort after the operation is normal.

- **Is surgery always needed?**

Umbilical hernias in infants may get better without surgery. But repairing a groin hernia is safer than leaving it untreated.

Risks and Complications

Hernia surgery for children is safe, but does have some risks. These include:

- Bleeding
- Infection
- Numbness or pain in the groin or leg
- Inability to urinate
- Risk the hernia will recur
- Bowel or bladder injury
- Damage to the testicles or ovaries
- Anesthesia risks

Preparing Your Child for Surgery

Follow your surgeon's advice to help get your child ready for surgery. You may be asked to:

- Tell the surgeon about any medications your child takes, including children's pain relievers.
- Accompany your child during tests. These may include urine and blood tests.
- Unless you're told otherwise, don't let your child eat or drink after midnight, the night before surgery.

The Day of Surgery

Your child will be given an IV to provide fluids and medications. You'll then meet with the anesthesiologist. He or she will talk with you about the anesthesia used to prevent pain during surgery. The type of surgery your child has depends on the location of the hernia. If your child has a related problem, such as an undescended testicle, it may also be repaired at the same time as the hernia.



Groin Hernia

An incision is made in the lower abdomen. Any protruding tissue is pushed back into place. The hernia sac is then removed and the incision closed with sutures.



Umbilical Hernia

A semicircular incision is made under the navel. Any protruding tissue is pushed back into place and the hernia sac is removed. The abdominal wall is then closed with sutures.

Your Child's Recovery

Your child can likely go home the same day as surgery. Don't worry if you notice some swelling or bruising. This is normal and should go away in a short time. To help speed recovery, encourage your child to move around. But children should avoid rough play for about a week. After that, it's okay to let them get back to doing things they enjoy. If you have questions or concerns, be sure to talk with the surgeon during follow-up visits.



When to Call the Surgeon

After surgery, call the surgeon if your child has any of the following:

- A large amount of swelling or bruising
- Fever over 101°F (38.3°C)
- Increasing redness or drainage of the incision
- Bleeding
- Increasing pain
- Nausea or vomiting

Feeling Good Again

Don't let a hernia put limits on your life. By deciding to have surgery, you can help eliminate discomfort and prevent future problems. This makes it easier to enjoy daily activities—even if it's just a day on the job.



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